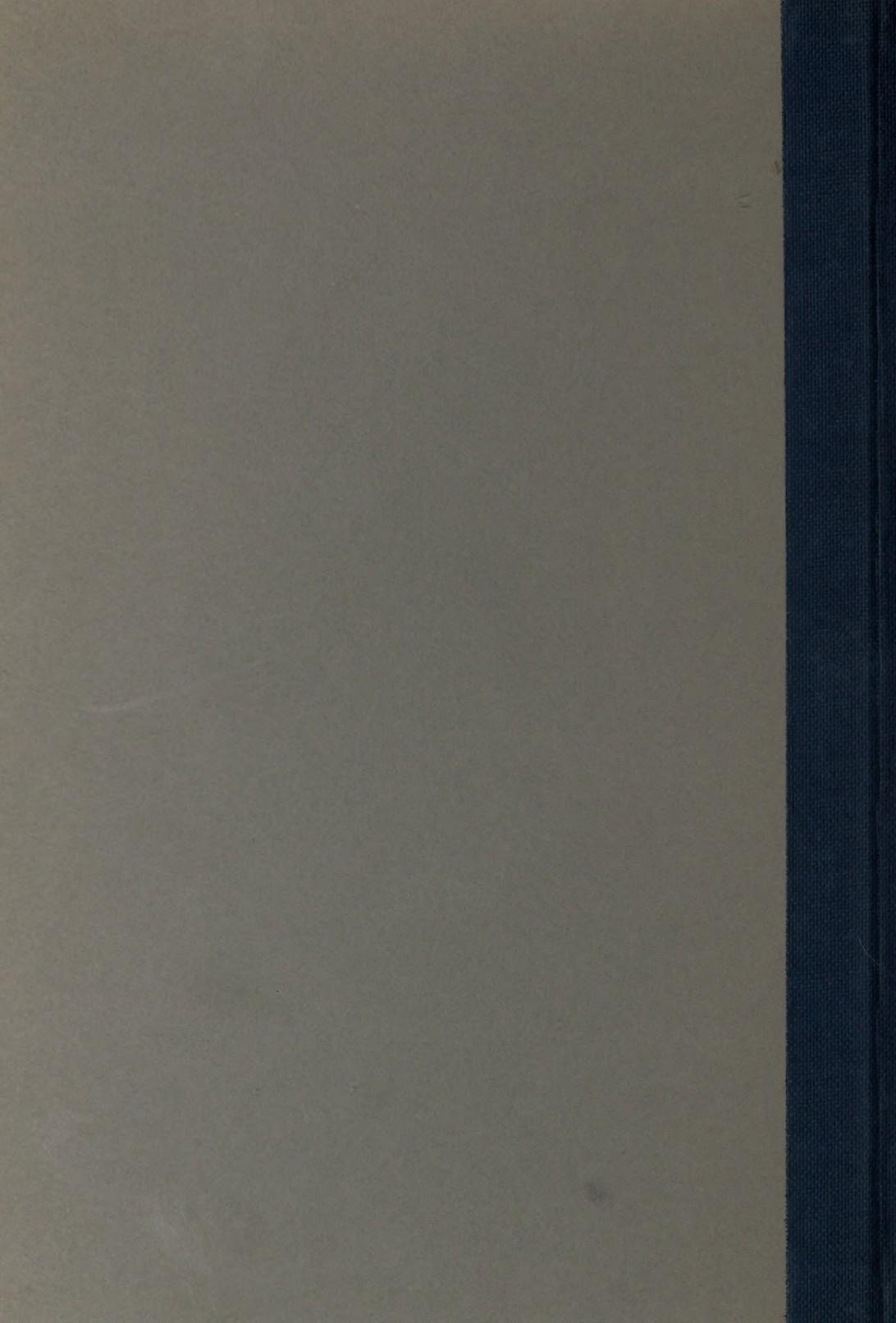


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RAILWAY SUPPLIES

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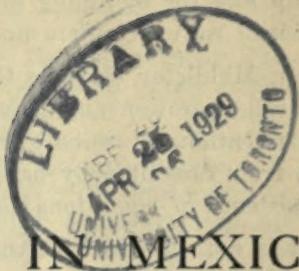
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RAILWAY SUPPLIES IN MEXICO

BY

P. HARVEY MIDDLETON

Executive Assistant, Railway Business Association



New York, May 26, 1919

RAILWAY SUPPLY requirements in Mexico are set forth in the accompanying report by P. Harvey Middleton, Executive Assistant of the Railway Business Association, who has just returned from a vacation spent in going over the lines in President Carranza's republic. Proficiency in the Spanish language and long study of foreign trade, especially with Latin America, supplement Mr. Middleton's gifts and experience as a writer on engineering and commercial subjects and well equip him for obtaining and presenting what business men interested in Mexican railway orders need to know.

Mr. Middleton observes that compared with some other periods in Mexico rail operation and travel are at present secure and tranquil, though the retention of armed guards on trains and the grim remark that "for one train assaulted by bandits fifty or more pass in safety" suggest the persistence of conditions not common for instance in Texas or California.

It is not, however, as railway managers or tourists, or primarily even as shippers of freight, that members of the Railway Business Association are interested in the Mexican roads, but as supply manufacturers seeking markets for product. Hence they may regard as an opportunity for them what is a calamity for some others—the dilapidation of equipment, way and structures which show Mexico's urgent need for substantial quantities of material. Railways having between 15,000 and 16,000 miles in operation, a part nationalized, a part outside government control and a part affiliated with well known lines in the United States, comprise a group of lines capable of consuming a substantial tonnage of necessities, provided financial arrangements are practicable.

Speaking specifically of the government operated lines, constituting more than half of the Mexican mileage, Mr. Middleton states that terms are "cash against documents." based upon a systematically replenished bank deposit at New York.

Members of the Railway Business Association are invited to seek information of Mr. Middleton either by letter or in person at the Association office.

FRANK W. NOXON, *Secretary*

30 Church Street
New York
May 26, 1919



Railway Supplies in Mexico

BY

P. HARVEY MIDDLETON

Executive Assistant, Railway Business Association

Col. Paulino Fontes, General Manager of the government lines south of Mexico City, has arrived in the United States on an errand understood to include enlargement of funds available for purchases to be made through the New York representative of the Mexican Government Railway Administration in the Woolworth Building, F. P. de Hoyos. Accepting an invitation entrusted to Mr. Middleton by President E. H. Walker of the Railway Supply Manufacturers Association, and extended in person in Mexico City, Col. Fontes has appointed Y. Romo of his staff to attend the Car Builders' Convention in Atlantic City June 18. A visit will also be made in June by a representative of the government lines north of Mexico City, V. L. Blanco, General Purchasing Agent, who will make his headquarters in the Woolworth Building.

In accepting the invitation tendered to me by Mr. M. Muñoz, Superintendent of Transportation and of Mr. R. Zerecero, Assistant General Manager, of the southern railway lines of Mexico, under Government control—an invitation which was extended by them on behalf of Col. Paulino Fontes, the General Manager of the system—to make a trip over the lines, I had in mind the possibility of Mexico as a field for American railway supplies.

After completing a trip from the Rio Grande to Yucatan and after three weeks spent in Mexico City at the offices of the Mexican Government Railway Administration, it is obvious that American railway supply manufacturers will in the very near future be called upon to furnish very large

quantities of every class of railway material. No matter what may happen politically in Mexico (President Carranza's term expires May 2, 1920, and under the present Constitution he cannot be re-elected), the rehabilitation of the railway system must be undertaken within the next 12 months to avoid a breakdown in the transportation machine.

The Mexican Government railway operating officials deserve the greatest credit for the manner in which they are keeping passengers and freight moving in the face of difficulties unknown to railway men in any other part of the world, but the constant decrease in equipment through lack of material with which to repair rolling stock and the occasional destruction of a train by bandits, coupled

with the constant increase in traffic offered for transportation, will compel large purchases of equipment. To realize the situation it is only necessary to point out that since 1910 revolutions have resulted in the destruction of over 10,000 freight cars; that at the present moment on the lines north of Mexico City 5,000 freight cars are laid up awaiting material with which to repair them, as well as 400 locomotives and 225 tank cars, and that track material needed includes about 87,500 tons of rails, accessories and supplies.

Cars in Bad Order

Leaving New York on April 8, I arrived at Laredo, Tex., on April 11, and the following day crossed the Rio Grande to Nuevo Laredo and boarded the train of the National Railways of Mexico, arriving at Monterrey late in the afternoon of the same day. Here I saw the first evidences of the urgent need for railway material. Just outside of the station near the track is the steel skeleton of what was once a repair shop and inside this open frame work are thirty rusty locomotive frames. From this point on I saw many freight cars in service in bad condition, holes being patched up with pieces of tin or rough boards nailed across them.

The roadbed on the line from Nuevo Laredo to Mexico City is, however, in excellent condition and the trip to the Capital was without incident, although it is still necessary to carry military guards on all trains. On our train there were forty soldiers, and this guard was changed at Monterrey and San Luis Potosi so that military protection was afforded throughout the journey. The time consumed in the trip from Nuevo Laredo to Mexico City was forty hours, the train being six hours late on account of engine trouble.

On my arrival in the Mexican Capital I decided before continuing my journey further south, to make a detailed study of the railway supply requirements of Mexico—a task which presented many difficulties owing to the fact that no statistics of importance have been compiled since 1913 and it was necessary for me to gather the material piecemeal from the files in the offices of the Government railways. However, I was able at the end of three weeks (ten days of which were "dead" owing to Holy Week and three other fiestas), to construct a table showing the extent to which the railway equipment of Mexico has shrunken since 1913, as the result of revolutions and the lack of material with which to repair rolling stock. This table is given at the end of this bulletin, and represents the rolling stock which must be replaced to bring the Mexican Government railways back to the state of efficiency existing in pre-revolutionary days under the American operating officials.

With the aid of the General Manager Colonel Fontes and Superintendent of Transportation Mr. Muñoz, I have prepared a list which is published in this bulletin covering railway supplies which the railway lines south of Mexico City are prepared to purchase at this time. This list is given with requisition numbers attached to each item and members of the Railway Business Association are advised to send quotations for this material to the offices of the South-eastern Lines of Mexico, 35th floor of the Woolworth Building, New York, or S. Pruneda, Estacion Buenavista, Lineas del Sureste de Mexico, Mexico City, mentioning this bulletin as the source of their information and giving requisition numbers.

Many of these requisitions are for small quantities, but the list is given as an indication of the kind of mate-

rial for which Mexico is constantly in the market. It is merely a preliminary list, and only represents a frac-

tion of the vast amount of material which must be purchased in the very near future.

Methods of Payment and Personnel of Organization

THE purchase of supplies for the Mexican government-operated railways is on a cash basis. Not less than \$250,000 is remitted to the New York office of the Mexican Government Railway Administration each month, and supplies are bought f. o. b. New York or f. o. b. factory, cash against documents. As soon as the bills are presented they are paid. On May 1, 1919, \$420,000 was on hand in New York banks to the credit of the Mexican Government railways. As soon as funds are used up they are replaced, and it is hoped in the very near future to materially increase the amount of money in hand for railway purchases. Col. Paulino Fontes, General Manager of the southern railway lines of Mexico under government control, has just arrived in New York, and the subject of increasing the amount of money available in the United States for current requirements will be one of the things which he will take up.

Sometime in June V. L. Blanco, General Purchasing Agent for the National Railways of Mexico, will arrive in New York from Mexico City to obtain prices for about five million dollars worth of railway supplies for use on the northern lines. Mr. Blanco will make his headquarters at the offices of the National Railways of Mexico, Woolworth Building, New York, and members of the Railway Business Association who desire to get in touch with him should address H. V. Garza, Assistant Purchasing agent of the Mexican Government Railway Administration, Woolworth Building. There are urgently needed at the present time on the northern lines 100 locomotives of 75 to 180 tons each, as

well as 75 first and second class passenger cars with six wheel trucks, and Mr. Blanco will obtain prices for these.

With me to Mexico City I carried a letter from President Edward H. Walker of the Railway Supply Manufacturers' Association addressed to Col. Paulino Fontes, General Manager of the southern railway system of Mexico, inviting him to send a representative to the June exhibition in Atlantic City. This invitation was gladly accepted, and Y. Romo will attend the convention as the representative of the lines under Col. Fontes' direction.

Resident Agent Desirable

To obtain the best results in the Mexican market, a group of American railway supply manufacturers should have a resident agent in Mexican City. He should be a man with a wide acquaintance among Mexican government officials, speaking Spanish fluently, thoroughly familiar with political and business methods under the present regime, of long residence in Mexico, able to sell goods not only to the government but to the privately operated lines. There are several Americans in Mexico City who answer these requirements. There are plenty of orders to be secured in Mexico and American manufacturers can sell their goods and get their money promptly provided the business is properly handled at the Mexican end. Accurate credit information can be obtained regarding commercial houses in Mexico from R. G. Dun & Co., who have an office in Mexico City and are in close touch with actual conditions.

Present Mexican Systems

THERE are between fifteen and sixteen thousand miles of railway in operation in the Republic at the present time, which include:

The Mexican Railways under government operation include the National Railways of Mexico which is made up of the Mexican National, Mexican Central, Mexican International, Monterrey and Gulf and the Cuernavaca and Pacific. Then there are the Southeastern Lines of Mexico in which are included the Mexican Railway, Vera Cruz and Isthmus, Tehuantepec National, Alvarado Railway, Pan-American, Interoceanic, Mexican Southern and several smaller lines.

Outside of Government ownership or control are: The Southern Pacific of Mexico, the Kansas City, Mexico and Orient, the Mexican Northwestern, the Mexican Northern, the Parral and Durango, the Potosi and Rio Verde, and the United Railways of Yucatan. Smaller lines are: From Acambaro to Queretaro; Avalos to San Pedro Ocamp, Celaya to San Roque and Santa Cruz, Cardenas to Rio Grijalva, Cazadero to Solis, Coahuila to Zacatecas, Camargo and Western, Esperanza to Xuchil, Inter-California, Puebla Industrial, Jalapa to Teocelo, Piedad to Piedad Cabadas, Lerdo to Torreon, Monte Alto Railway, Minatitlan to Carmen, Chihuahua Mineral Railway, Naeozari Railway, Orizaba to Ingenio, Mexico Western, Tampico to La Barra, Tiajuana to Tecate, Torres to Minas Prietas, Toluca to San Juan, Rio Frio Railway, San Rafael and Atlixe, and several others of more recent construction, notably in the oil region. Practically all these private lines buy their supplies in the United States, at present largely through commission houses.

The Government railway system is

divided into two great systems, the Northern lines being under the direction of Felipe Pescador. The Southern lines being under the direction of Colonel Paulino Fontes. The headquarters of both Northern and Southern systems are in Mexico City.

Equipment in Government Service

The Mexican Railway has in service 54 locomotives of standard gage and 11 of narrow gage; 58 passenger cars standard gage, 13 narrow gage; 569 freight cars standard gage and 105 narrow gage.

The National Railways have: 767 locomotives standard gage and 295 narrow gage; 497 passenger cars standard gage, 258 narrow gage; 11,062 freight cars standard gage and 2,778 narrow gage.

The National Tehuantepec has: 47 locomotives standard gage, 12 passenger cars standard gage and 1,008 freight cars. The Vera Cruz and Isthmus, standard gage, 16 locomotives, 10 passenger cars, 193 box cars. Pan-American, standard gage, 7 locomotives, 1 passenger car, 40 freight cars. Vera Cruz to Alvarado has 7 locomotives, 1 passenger car and 40 freight cars. On branch lines of the Mexican Railway, are 11 locomotives, 13 passenger cars and 105 freight cars. Equipment owned by shippers or rented to shippers includes 158 locomotives and 3,263 freight cars.

Several Pullman cars were recently purchased in the United States by the National Railways of Mexico at a cost of \$10,000 each and a few months ago 3 Pullman sleeping cars were completed in the railway shops in Mexico City.

There is great activity in the railway machine shops in Monterrey, Torreón, Aguascalientes, Mexico City, Puebla, Vera Cruz and Orizaba, where locomotives and passenger and freight

cars are being repaired as fast as material can be obtained. A new style of electric passenger coach was recently completed in the railway machine shops at Aguascalientes. This was made entirely by Mexican

mechanics and is said to be the best equipped of any in use in the Republic. As soon as material can be obtained it is proposed to turn out this passenger coach in large quantities.

New Lines Proposed or Under Way

ACTIVE construction is soon to be commenced on a new railway line extending from the City of Zacatecas, capital of the State of the same name, on the old Mexican Central Railway, south west to the cities of Jerez, Villanueva and Tlaltenango. The new line will traverse a fertile agricultural region which has been retarded in the past by lack of adequate transportation facilities. The necessary material for the construction of the line has been secured and work will begin shortly.

The American Smelting and Refining Company is negotiating with the management of the National Railways of Mexico for the development of plans by which the former concern will expend some five millions of dollars in the construction of a new railway line to be operated in connection with its extensive mines and smelters in the states of Chihuahua and Durango. The company intends to gradually extend its operations and give employment to many thousands of additional workmen.

The concession has been granted for the construction of a railway from Mexicali, a railroad town on the boundary line between the United States and Mexico, to the bay of San Felipe, in the Gulf of California, a considerable distance South of the mouth of the Colorado River. The region to be traversed is rich in agricultural possibilities, but at present is kept in a backward condition by lack of transportation facilities. Cotton and other products are raised on a small scale, but with the construc-

tion of the proposed railway, development of the region both agriculturally and from a mining standpoint, is expected to follow.

Work is progressing on the new line of railway between Guadalajara and the port of Chamela, on the Pacific Coast. Large quantities of hard-wood ties cut on the Tres Marias Islands by Yaqui Indians have been received for construction, and a good portion of the roadbed has been graded and prepared for track laying, while considerable steel has already been laid. Branches will be constructed from Mascota and Autlán to connect with this new line.

Crossing the Sierra Madre

An important project which now bids fair to be realized is the completion of the Southern Pacific Railroad of Mexico so as to constitute a direct connection between the vast system of that company and its connecting roads in the States with the entire west coast of Mexico, including the states of Sonora, Sinaloa, Nayarit, Jalisco and across the Sierra Madre by existing lines to Mexico City. This line had been completed from Nogales to Compostela, a point a few miles south of the city of Tepic, before the revolution, and freight and passenger trains were run regularly to the city named. The surveys of the road were directed to San Marcos, in the north-western portion of the state of Jalisco, which was a temporary terminus of the line that had been built westward from the city of Guadalajara to connect with the line being built south-

ward from Nogales. While the intervening distance is only a few miles comparatively speaking, the character of the country is so rugged and difficult, being comprised of a portion of the Sierra Madre, that a number of tunnels and much heavy grading are necessary, one tunnel in particular being planned, that is two or three miles in length. Representatives of the Southern Pacific are now in the field arranging for the early resumption of construction work between Tepic and San Marcos.

The above road affords the only outlet for the agricultural and mineral products of the immensely wealthy west coast. The only other means for exportation are the infrequent steamers of various lines, but which do not suffice to handle one hundredth part of what that region is capable of producing in almost infinite variety, including corn of superior quality, sugar, cotton, coffee, tobacco, fruits of every kind, sea products, hard and soft woods, dye woods, grain, beans, peas, cattle, hides, minerals of great value and abundance.

There is also a revival of interest in

the completion of the line from Piedras Negras in the state of Coahuila to Mazatlan—now constructed as far as Durango. Careful examination is being made of the various routes that may be followed in crossing the Sierra Madre from Durango. The western slope of the Sierra Madre is rugged and precipitous to a degree, but it is not impossible from the standpoint of modern railway construction methods. The region that will be traversed by this road is rich in timber wealth of various kinds, while its mineral treasures have been scarcely touched. Agriculturally too, it is susceptible of great development. For the entire thousand or more miles from the American boundary to the point where the railway will cross the mountains between Tepic and Guadalajara, there is no trans-mountain communication other than that by pack train and trails, and during the revolution it was impossible to send troops or munitions to that part of the country except in the most round about and expensive manner. It is estimated that the cost of the Durango-Mazatlan line will be about \$15,000,000.

Railroad Warfare

CONDITIONS, so far as law and order are concerned, are far less satisfactory than Mexico's friends could desire. Portions of the country are overrun with bandits. No matter what they may call themselves, whether Felicistas, Zapatistas or Villistas, or upon what platform they may pretend to be opposing the Government, the fact remains that they are outlaws pure and simple. They constitute no grave menace to the stability or permanence of the Mexican Government. There is no concert or cooperation among them. They are important only for that they delay and make difficult the resump-

tion of normal economic commercial and development activities in the more remote parts of the country.

Little by little the Government is making headway against the bandits. They do not control one state in the entire confederation. Parts of states, where geographical conditions and distance from railways combine to make campaigning difficult, are more or less under their domination. Occasionally they attack or blow up railway trains. This is decidedly unpleasant, but when one considers the vast stretches of comparatively uninhabited rough country traversed by some of the railway lines, and the ease

with which a handful of men, provided with a few sticks of dynamite, can wreck a train or a bridge, one wonders that more of these outrages are not perpetrated. For one train assaulted by bandits, fifty or more pass in safety.

The establishment of block-houses along the line of the Mexican Railway, standard gage, between Mexico City of Vera Cruz, over which I travelled on May 8, has resulted in the protection of that route from the attacks of the Felicistas, and travel is now regular and comparatively safe. There are 70 of these railroad forts about four miles apart, connected by telephone, and in many cases within sight by field glasses from one to the other. At the first suspicious occurrence, troops are rapidly dispatched to the threatened point. Ditches are excavated around each fort and these ditches are protected by steel barbed wire strung at a reasonable distance from the trenches and around them.

From the Capital to the Gulf

No trains are operated at night on this route. I boarded the train at the Buenavista station, Mexico City, on the night of May 7 and we pulled out at 5 a. m. with a military guard and made an uneventful run across the central plateau to Esperanza. On leaving this station we soon struck the most perilous part of the run through the mountains, a mile and a half above sea level, from Esperanza to Maltrata. At one point here, at Alta Luz, the train is 2,919 feet higher than the top-most point of Mount Washington, and the panorama was awe inspiring as the train glided along perpendicular cliffs and over spidery bridges, across chasms where the sight drops over 2,000 feet before resting on anything on which even a blade of grass can lay hold. The scenery attained its greatest magnificence when we crept

along the Matrata *cumbre* whence the eye dominates a thousand square miles of mountain ridge and tropical valley. At this great distance and elevation the houses in the valley far below resemble match boxes and the cows look no larger than dogs. From the car window it looked like the view from an aeroplane. The powerful hill climbing Fairlie locomotives are used on this line.

Going down these mountains at a gradient of nearly 5% over great curves and aerial bridges one's mind inevitably dwelt on the possibilities of a stick of dynamite carefully placed. Only a few days before at Las Vegas, in these same mountains on the Interoceanic Railway (narrow gage), a train was dynamited by Felicistas, the military guard attacked, a number of persons killed and the cars burned. However, we reached Orizaba in safety, observing for three miles along the line entering the station a veritable wall of wrecked railway equipment, the twisted frames of cars of every description, some of them bent double, engine frames, wheels by the hundred with and without trucks, and great piles of debris that was once part of cars or engines.

From Orizaba to Vera Cruz extra precautions are taken to protect all passenger trains from rebel attacks through the heavily wooded sections. Our train was provided with an advance guard, called *el tren de exploradores*. This is a locomotive and four cars filled with soldiers, with soldiers also riding on the car roofs, fully armed, and ready for instant action. Our train followed behind, with another carload of soldiers on the rear.

We were now in the heart of the coffee zone, approaching Cordoba, and soon reached one of the most weird passes on the line, going through a number of tunnels and then very gingerly across the Metlac bridge, a

very skilful piece of engineering work 350 ft. long, built upon a curve of 325 ft. radius, on a 3% grade, 92 ft. above the river. Eight cast and wrought iron pillars on masonry bases uphold it, and when a long train is winding across it the horseshoe effect is very striking. Flagmen are stationed here permanently, as the pass is considered the most dangerous on the line. From Cordoba to Vera Cruz the run is through level country, and we reached the seacoast without unpleasant incident.

As a consequence of the success of the block-house system on the Mexican Railway, it has been decided to equip the Interoceanic Railway, a narrow gage line running from Mexico City to Vera Cruz, in the same manner. This line has suffered severely from bandit raids. Passenger service has been frequently interfered with and several times stopped entirely. The military authorities in the State of Vera Cruz have ordered that 60 block-houses be built close to the tracks and extending along the entire length of the line. At the time I was in this part of Mexico, military engineers

were engaged in selecting sites for the block-houses.

To check attacks against railroads by the Vilistas in the northern part of the republic, it is proposed to build block-houses on the railway between Chihuahua and Ciudad Juárez. This railroad has suffered from numerous bandit raids, the Villistas swooping down on a town or a railway train, capturing supplies, possibly money and sparse ammunition, and whirling back to one of their numerous hiding places in the mountains. The secretary of war of Mexico ordered the dispatch of a commission of three engineers to Chihuahua to prepare plans for the construction of these block-houses.

A large amount of rolling stock has been returned to the railway management by military commanders who now have no further use for it, owing to the pacification of the districts controlled by them. Five locomotives and sixty cars were thus recently returned in the State of Chihuahua alone. These cars are invariably returned in a deplorable state, without seats, windows or shades.

LIST OF MATERIALS REQUIRED BY RAILWAY LINES SOUTH OF MEXICO CITY

Quotations for these items will be requested either by Mr. Silviano Pruneda, Purchasing Agent, Estacion Buenavista, Ferrocarril Mexicano, Mexico, D. F. or by Mr. F. P. de Hoyos, General Agent, Mexican Government Railway Administration, Woolworth Building, New York.

	<i>Requisition Numbers</i>
1,000 Car Wheels, 33-in. diameter.....	AG-692, AC-2316
1,000 Car Wheels, 30-in., narrow gauge.....	CE-75, AC-4163
2,000 Car Wheels, 33-in., standard gauge.....	CE-75, AC-4163
6,500 Tie Plates.....	113-CV, AC-2751
Locomotive Tires.....	AG-776, AC-2771
Locomotive Tires.....	AG-778, AC-2772
Channels, Plates, Tank Sheets.....	AG-824, AC-2773
Bars, Bolts, Clamps, Drills.....	AG-830, AC-2797
Boiler Flues.....	AG-886, AC-2860
2,000,000 square feet Pine.....	CE-75, AC-4163
1,000,000 square feet Oak.....	CE-75, AC-4163
1,000,000 square feet Miscellaneous Lumber.....	CE-75, AC-4163
Locomotive Tires.....	CE-75, AC-4163
Steel Firebox Plate.....	CE-75, AC-4163
Steel Plates for Tank Cars.....	CE-75, AC-4163
Air Gauges.....	AG-331, AC-4152
80 60-gallon Casks for Water.....	628-CV, AC-4182
10 Rolls Wire and 250 Kilos of Nails.....	628-CV, AC-4162
10 Tons Lime.....	AG-370, AC-4132
5 Tons Lime.....	621-CV, AC-4123
10 Tons Lime.....	CV-519, AC-3761
*1,000,000 Cross Ties, standard gauge.....	CE-75, AC-4163
* 500,000 Cross Ties, narrow gauge.....	CE-75, AC-4163
Accessories for Pintsch Gas.....	CE-75, AC-4163
100 Pairs Catches, Deck Sash, A. & W. Co., No. 35.....	AG-42, AC-183
20 Kilos Chalk White, lump.....	AG-42, AC-183
50 Kilos Cord, Bell, Hemp, 5-16-in.....	AG-42, AC-183
30 Kilos Rivets, Deck Sash, No. 3, A. & W.....	AG-42, AC-183
70 Kilos Rivets, Tinned, Iron, various sizes.....	AG-42, AC-183
76 Gross, Screws, Flat Head, Brass, various sizes.....	AG-42, AC-183
6 Wheel "Barnes," Pipe Cutters, No. 3.....	AG-42, AC-183
240 Kilos Wire, Copper, Soft Drawn, various sizes.....	AG-42, AC-183
5 Kilos Wire, Brass Spring, 1-32-in.....	AG-42, AC-183
5 Kilos Wire, Brass Spring, No. 16.....	AG-42, AC-183
24 Sheets Asbesto Millboard, $\frac{1}{8}$ -in. x 40-in. x 40-in.....	AG-42, AC-183
24 Sheets Asbesto Millboard, sheets 1-16-in. thick, 40-in. wide.....	AG-42, AC-183
100 Kilos Asbesto Rope, $\frac{1}{2}$ -in.....	AG-42, AC-183
24 Pieces Burners, Acetylene, $\frac{1}{4}$ in., Colonial No. 2.....	AG-42, AC-183
144 Pieces Burners, "Dual" No. 2.....	AG-42, AC-183
144 Pieces Burners, "Dual" No. 3.....	AG-42, AC-183
36 Kilos Carborundum.....	AG-42, AC-183
Carborundum Wheels.....	AG-826, AC-2769
144 Pieces Gaskets Lubricator, $\frac{1}{8}$ -in. hole, 15-16-in. diam., 4-ply.....	AG-42, AC-183
144 Pieces Gaskets Lubricator, for Detroit No. 21 Bull Eye Lubricator.....	AG-42, AC-183
Packing Cloth Insertion, various sizes.....	AG-42, AC-183
50 Kilos Putty, Commercial, in bladders.....	AG-42, AC-183
790 Kilos, Bolts, Machine, various sizes.....	AG-42, AC-183
100 Mts. Chain, Straight, Link Iron, $\frac{3}{8}$ -in.....	AG-42, AC-183
100 Mts. Chain, Straight, Link Iron, $1\frac{1}{4}$ -in.....	AG-42, AC-183
108 Packages Cotters Spring, various sizes.....	AG-42, AC-183
2 Kegs Nuts, Hexagon, Tapped U. S. S., $\frac{7}{8}$ -in.....	AG-42, AC-183
2 Kegs Nuts, Hexagon, Tapped, $1\frac{1}{4}$ -in.....	AG-42, AC-183
2 Kegs Nuts, Square, Tapped, $\frac{5}{8}$ -in.....	AG-42, AC-183
3 Kegs Rivets, Cone-Head, Boiler Burden, Iron, $\frac{3}{4}$ -in. x 2-in.....	AG-42, AC-183
3 Kegs Rivets, Cone-Head, Boiler Burden, Iron, $\frac{3}{4}$ -in. x $3\frac{1}{2}$ -in.....	AG-42, AC-183
1 Keg Washers, Cut $\frac{3}{8}$ -in.....	AG-42, AC-183
1 Keg Washers, Cut, $\frac{1}{2}$ -in.....	AG-42, AC-183
1 Keg Washers, Cut, $\frac{5}{8}$ -in.....	AG-42, AC-183
1 Keg Washers, Cut, $\frac{7}{8}$ -in.....	AG-42, AC-183
50 Pieces Bushings, $\frac{1}{2}$ -in. x $\frac{3}{8}$ -in.....	AG-42, AC-183
50 Pieces Bushings, 1-in. x $\frac{3}{4}$ -in.....	AG-42, AC-183
50 Pieces Couplings, Reducing, $\frac{3}{4}$ -in. to $\frac{1}{4}$ -in.....	AG-42, AC-183
50 Pieces Couplings, Reducing, $\frac{7}{8}$ -in. to $\frac{5}{8}$ -in.....	AG-42, AC-183
50 Pieces Couplings, Reducing, $\frac{3}{4}$ -in. to $\frac{1}{2}$ -in.....	AG-42, AC-183

Requisition Numbers

50	Pieces Couplings, Wrot, $\frac{1}{4}$ -in.	AG-42, AC-183
100	Pieces Couplings, Wrot, $\frac{3}{4}$ -in.	AG-42, AC-183
50	Pieces Couplings, Wrot, $1\frac{1}{4}$ -in.	AG-42, AC-183
50	Pieces Elbows, Malleable, Beaded, $\frac{1}{4}$ -in.	AG-42, AC-183
50	Pieces Couplings, Wrot, 1-in.	AG-42, AC-183
100	Pieces Elbows, Malleable, Beaded, $\frac{3}{4}$ -in.	AG-42, AC-183
50	Pieces Pipe, Wrot Iron, 1-in.	AG-42, AC-183
50	Pieces Couplings, Wrot, $1\frac{1}{4}$ -in.	AG-42, AC-183
50	Pieces Pipe, Wrot Iron, $1\frac{1}{2}$ -in.	AG-42, AC-183
20	Pieces Pipe, Wrot Iron, 2-in.	AG-42, AC-183
50	Pieces Plugs, Cast for Screw Pipe, $\frac{1}{4}$ -in.	AG-42, AC-183
25	Pieces Plugs, Cast for Screw Pipe, $\frac{3}{8}$ -in.	AG-42, AC-183
25	Pieces Plugs, Cast for Screw Pipe, $\frac{1}{2}$ -in.	AG-42, AC-183
25	Pieces Plugs, Cast for Screw Pipe, $1\frac{1}{4}$ -in.	AG-42, AC-183
50	Pieces Tees, Malleable, Beaded for Screw Pipe, $1\frac{1}{2}$ -in.	AG-42, AC-183
50	Pieces Tees, Malleable, Beaded for Screw Pipe, $\frac{3}{8}$ -in.	AG-42, AC-183
50	Pieces Unions, Common, Malleable, $\frac{1}{2}$ -in.	AG-42, AC-183
50	Pieces Unions, Common, Malleable, $\frac{3}{4}$ -in.	AG-42, AC-183
50	Pieces Unions, Common, Malleable, $1\frac{1}{4}$ -in.	AG-42, AC-183
25	Pieces Unions, Common, Malleable, $1\frac{1}{2}$ -in.	AG-42, AC-183
10	Pieces Globe Valves, Brass, Screwed, $\frac{1}{4}$ -in.	AG-42, AC-183
10	Pieces Globe Valves, Brass, Screwed, $\frac{3}{8}$ -in.	AG-43, AC-183
10	Pieces Globe Valves, Brass, Screwed, $\frac{1}{2}$ -in.	AG-42, AC-183
12	Pieces Globe Valves, Brass, Screwed, $\frac{3}{4}$ -in.	AG-42, AC-183
12	Pieces Globe Valves, Brass, Screwed, 1-in.	AG-32, AC-183
1	Piece Gauze, Steam Locomotive, Brass, $6\frac{3}{4}$ -in., Black Draill. White Figures, 300-lbs. Pressure	AG-42, AC-183
24	Mts. Tubing, Copper, Seamless, $\frac{3}{8}$ -in., O. D. 3-32-in. thick, 12 ft. 6 in. length	AG-42, AC-183
24	Mts. Tubing, Copper, Seamless, 2-in., O. D. 5-32-in. thick, 15 ft. length	AG-42, AC-183
24	Mts. Tubing, Copper, Seamless, $2\frac{1}{4}$ -in., O. D. 3-16-in. thick, 12 ft. 6 in. length	AG-42, AC-183
50	Lts. Eucalyptum	AG-42, AC-183
5	Rolls Gold Leaf Ribbon, XX, $\frac{1}{2}$ -in.	AG-42, AC-183
5	Rolls Gold Leaf Ribbon, XX, $1\frac{1}{2}$ -in.	AG-42, AC-183
100	Kilos Plaster of Paris	AG-42, AC-183
2	Pieces Crucibles, No. 80	AG-42, AC-183
50	Sheets Iron, Planished, No. 22 U. S. sheets 28-in. x 72-in.	AG-42, AC-183
2	Sheets Lead, sheets 1-16-in.	AG-42, AC-183
500	Kilos Steel Angle, $\frac{3}{8}$ -in. x $3\frac{1}{4}$ -in. x $3\frac{1}{4}$ -in.	AG-42, AC-183
500	Kilos Steel Angle, $\frac{1}{2}$ -in. x $3\frac{1}{2}$ -in. x $3\frac{1}{2}$ -in.	AG-42, AC-183
500	Kilos Steel Angle, $\frac{1}{2}$ -in. x $3\frac{3}{4}$ -in. x $3\frac{3}{4}$ -in.	AG-42, AC-183
500	Kilos Steel Angle, $\frac{1}{2}$ -in. x 4-in. x 4-in.	AG-42, AC-183
2	Sheets Steel Fire Box, sheet 5-16-in. x 52-in. x 92-in.	AG-42, AC-183
1	Sheet Steel Fire Box, sheet 9-16-in. x 80-in. x 80-in.	AG-42, AC-183
200	Kilos Steel, Machine, Round, $\frac{1}{4}$ -in.	AG-42, AC-183
3,000	Kilos Steel, Spring, $\frac{3}{8}$ -in. x 7-in.	AG-42, AC-183
1,000	Kilos Steel, Spring, 7-16-in. x 7-in.	AG-42, AC-183
4	Sheets Steel, Tank, 1-32-in. x 48-in. x 120-in.	AG-42, AC-183
6	Sheets Steel, Tank, 1-16-in. x 48-in. x 120-in.	AG-43, AC-183
6	Sheets Steel, Tank, $\frac{1}{2}$ -in. x 48-in. x 120-in.	AG-42, AC-183
6	Sheets Steel, Tank, 3-16-in. x 48-in. x 240-in.	AG-42, AC-183
400	Pieces Brake Beams, R. H. Acme I. H.	AG-42, AC-183
600	Pieces Flues, Boiler, Charcoal.	AG-42, AC-183
123	Wheels, Cast Iron, for freight cars.	AG-42, AC-183
72	Wheels, Handcar	AG-309, AC-3945
16	Sets Taps, Hand Machinists, U. S. S.	AG-42, AC-183
190	Pieces Pneumatic Material	AG-42, AC-183
20	Taps, Patch Bolts	AG-42, AC-183
60	Mts. Burlap	AG-42, AC-183
3	Rolls Canvas	AG-42, AC-183
80	Kilos Hair, Curled F. M. Black, Grade of Armour Curled Hair Works.	AG-42, AC-183
100	Feet Plush, Quality "E," Red	AG-42, AC-183
100	Pieces Lamps, Incandescent	518-CV, AC-377
10,000	Pairs Baggage Checks	155-AC, 378
2,480	Pairs Tieplates	AG-543, AC-200
800	Chisel Points	AG-297, AC-114
200	Separators for Accumulators.	AG-312, AC-394
10	Tons Babbitt Metal	AG-328, AC-401
100,000	Car Seals	CD-46, AC-400
500	Towels for Pullman.	AG-358, AC-405
3	Tons Antimony	AG-279, AC-381
15,300	Hose for Air Brake	AG-360, AC-406
3,150	Hose for Air Brake	610-CV, AC-406
5,000	Partitions	610-CV, AC-406
20,000	Kilos of Lime	AG-338, AC-407
500	Kilos of Borax	AG-359, AC-407
50	Water Barrels	363, AC-406
	Picks, Bars, Jacks, etc.	AG-349, AC-407
300	Boxes of Carbide.	169, AC-404
	Tubes, Rods and Valves.	AG-368, AC-411
	Electrical Material	AG-330, AC-411
52	Manometers	

	Requisition Numbers
13 Windows Various Sizes.	589-CV, AC-4025
15,000 Incandescent Lamps	AG-261, AC-3742
864 Pac. Burners, 5 barrels of Globes	AG-211, AC-4681
2,100 Pieces Pipe, Screw, Lap Welded	AG-210, AC-3690
50 Cases Pure Turpentine	AG-379, AC-4142
Adzes, Axes and Handles	AG-346, AC-4003
Narrow Gauge Freight Cars	78-CV, AC-2653
Blocks and Tackle	AG-793
24 Tires, 5 $\frac{1}{2}$ -in. wide, Rough Rolled, 43 $\frac{3}{4}$ -in.	AG-596, AC-2179
700 Galvanized Plates	AG-47, AC-3232
50 Pieces Brake Beam Heads	AG-181, AC-3589
45 Window Glasses of Various Sizes	451-CV, AC-3523
21 Window Glasses, 12-in. x 18-in.	255-CV, AC-3042
20 Machetes	179-AG, 4130
American Yellow Pine, Various Sizes	AG-895, AC-2961
Bengal Lights and Torpedoes	AG-41, AC-3226
50 Levels	AG-1*2, AC-3580
Electric Lanterns	AG-653, AC-2235
48 Rules of Interchange Books	38-LA, AC-2720
Stationery	607-CV, AC-4077
Transparent Curtains	171-AC, 3980
Padlocks	AG-644, AC-4001
Wire Netting	AG-314, AC-4006
380 Pieces Steel Spring	AG-336, AG-4018

* Ties are usually bought in the Mexican market.

Quotations are also required for air brake equipment and tank cars. All material for repair of locomotives and cars must be in accordance with the

specifications of Master Car Builders. Competitive bids are obtained and ordered are placed on basis of quality as well as price.

SHRINKAGE IN MEXICAN RAILWAY EQUIPMENT

	Number Destroyed or Condemned Tons Since 1913	Number Destroyed or Condemned Tons Since 1913	
Standard Gauge Box Cars...	13.6 41		
" " "	18.2 67	Narrow Gauge Flat Cars...	12.0 24
" " "	22.7 62	Standard Gauge Coke Cars...	22.7 8
" " "	27.2 1,673	Standard Gauge Tank Cars...	27.2 25
" " "	36.3 1,630	" " " " " 36.3 106	
Narrow Gauge Box Cars...	20.0 254		
" " "	25.0 204		
" " "	27.2 16		
" " "	10.0 21	Narrow Gauge Tank Cars...	25.0 16
" " "	20.0 270	Standard Gauge Cabooses...	13.6 82
" " "	12.0 86	" " " " " 18.2 15	
" " "	20.0 27		
Standard Gauge Cattle Cars...	18.2 11	Narrow Gauge Cabooses...	22.7 61
" " "	22.7 4	" " " " " 11.5 11	
" " "	27.2 399	" " " " " 10.0 28	
" " "	36.3 309		
Narrow Gauge Cattle Cars...	20.0 45	Standard Gauge Ballast Cars	13.6 35
" " "	10.0 11	" " " " " 18.2 34	
" " "	27.2 5		
" " "	12.0 13	Standard Gauge Passengers Cars, Combination First and Second Class.....	— 22
Standard Gauge Gondolas...	22.7 23		
" " "	27.2 407	Narrow Gauge Passenger Cars, Combination First and Second Class.....	— 12
" " "	36.3 592		
Narrow Gauge Gondolas...	20.0 22	Standard Gauge Passenger Cars, Second Class.....	— 55
" " "	10.0 3		
" " "	25.0 44	Narrow Gauge Passenger Cars, Second Class.....	— 44
Standard Gauge Hopper Cars	36.3 20	Standard Gauge Combination, Baggage, Mail and Express.	— 38
" " "	45.4 151		
Standard Gauge Flat Cars...	13.6 12	Narrow Gauge Combination, Baggage, Mail and Express.	— 19
" " "	22.7 25		
" " "	27.2 176		
" " "	36.3 502		
Narrow Gauge Flat Cars...	25.0 124		
" " "	22.0 65		

R E Q U E S T S F O R C O P I E S

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